

Appl. No. 09/732,432  
Amdt. Dated: May 27, 2004  
Reply to Office Action of April 7, 2004

REMARKS

Priority Claim

Applicant respectfully requests that the Office acknowledge the claims of priority under 35 USC Sections 119(e) and 120.

Drawings

Applicant acknowledges the acceptance of the Drawings filed Dec. 7, 2000 and the proposed amendment dated Jan. 20, 2004.

Claim Rejections – 35 USC § 103

The Office has rejected claim 17-35 under 35 USC 103(a). Applicant has carefully considered the Office rejections and respectfully submits that the arguments and amendments herein detail the distinctions of the present invention that traverse the cited references. Reconsideration and allowance of all claims is requested. The statute from 35 USC 103(a) and portions of MPEP §2143.01 regarding obviousness are already of record.

The Office rejected Claim 17-19, 21-23 and 25-35 under 35 USC 103(a) as being unpatentable over Frigo (U.S. Pat. No 5,521,734) in view of Arstein et al (U.S. Pat. No 5,208,693). The Office states that Frigo teaches a network device encompassing the limitations of the claims 17, 28 and 32 of the present invention and offers Prior Art Fig. 1A in support thereof. In further detail, the Office states that the Frigo reference comprises a central array having a plurality of transmitters and receivers wherein the central array (Frigo central office 20 in Fig. 1A) is divided in at least one subarray, which is a transmitter/receiver pair (Frigo T<sub>1</sub>/R<sub>1</sub>, ... T<sub>N</sub>/R<sub>N</sub>). The Office essentially equates the one-dimensional transmitter/receiver pairs of the Fig. 1A central office 10 of Frigo to the central array of the present invention such as shown in present application Fig. 5. The present application Fig. 5 two-dimensional array illustrates a central node embodiment fabricated on a substrate employing the receiver reserved protocol as detailed herein.

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The Office state that Frigo Fig. 1A also encompasses at least one secondary node (Frigo remote terminal 30 in Fig. 1A) having at least one dedicated secondary node receiver R' and a plurality of secondary node transmitters T<sub>1</sub>'... T<sub>N</sub>'.

Applicant submits that this is not an entirely accurate representation of the invention of Fig. 1A of Frigo. Referring to Frigo, a single remote terminal 30 has a one-to-one correspondence between the central office T<sub>1</sub>R<sub>1</sub> pair and the R'T' pair on the remote terminal. Thus, Fig. 1A does not possess 'at least one secondary node comprised of at least one dedicated secondary node receiver and a plurality of secondary node transmitters, wherein each secondary node is respectively coupled to said subarray, and wherein each said dedicated secondary node receiver and said plurality of secondary node transmitters are coupled to each said subarray.'

The Office refers to the remote terminal transmitters T<sub>1</sub>', ...T<sub>N</sub>' – however these are not coupled back to the subarray of the central node over the fiber optic lines 25D/25U as stated in the amended claims 17 and 28 of the present invention. Instead, the signals received at the remote terminal at R'/T' are processed via the Switch and are 'de-multiplexed, re-formed, and launched from transmitter T<sub>1</sub>' within fibers 35D to a plurality of optical network units (ONUs) 40 forming a secondary star." (Frigo Col 1, lines 31-33) This is readily distinguished from the present invention in both form and function, and the present claims reflect these distinctions.

Thus, the Applicant believes that the Office incorporates certain elements of the present invention that are not supported in the reference and the further amendments more clearly distinguish the present invention. The Applicant has already distinguished itself from the various transmitter/receiver pair references already of record (see for Example the prior Office Action Response in relation to Delcoco (U.S. Pat. No 5,127,067)), and Frigo is also distinguished and traversed herewith.

Furthermore, the Office acknowledges that Frigo does not disclose a receiver reserved protocol and cites Arstein as teaching this protocol. As detailed herein, Arstein does not teach the

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receiver reserved protocol as described in the specification and provides further support for allowance of the present claims.

Arstein teaches a 'protocol for fiber-optics communication systems, or other communication systems, based on transmission of unipolar pulses, and a receiver adapted for the protocol.' (Arstein Col 2, lines 32-35) While Arstein does describe a protocol – it is not the receiver reserved protocol according to the present invention. The unipolar pulses of Arstein provide for packet transmissions in a time slot based on RC time constant modes. Arstein depicts various signal level detection schemes and timing aspects that are entirely unrelated to the received reserved protocol of the present invention. The accompanying description of Arstein Figure 3 indicates that the short preamble helps to indicate whether the signal transmission rate can be increased – it is an assessment of the signal strength and bit error rate. There does not appear to be any dedicated communications paths as noted in the receiver reserved protocol according to the teachings of the present invention.

The illustrative purposes, the Abstract of Arstein is also useful in assessing that invention:

"A protocol for fiber-optic communication systems, or other communication systems based on transmission of unipolar pulses having wide dynamic range provides for information to be transmitted in packets having a predictable time slot for each transmitter. The receiver for such protocol has a first relatively long RC time constant mode conditioned for reception of data packets whose time of arrival is well predictable and a second relatively short RC time constant mode conditioned for reception of asynchronous randomly received packets. In the relatively long RC time constant mode, each packet includes a preamble having a first clamp interval in which no pulse is transmitted, and a second clamp interval in which a continual pulse is transmitted. A transducer on the receiver translates the packets of pulses into differential electronic signals on first and second outputs. First and second coupling capacitors, receive respective outputs of the transducer and AC couples the signals to respective second terminals of the capacitors. First and second switches connect the second terminals of the respective coupling capacitors to ground during the first and second clamping intervals, respectively, of the preamble. By clamping the outputs of the transducer to ground during the first and second clamping intervals, a DC level for each incoming packet is instantly established independent of the magnitude of the incoming packet. In the asynchronous mode, relatively low impedance discharge paths are established to reduce the time constant of the receiver. An output circuit, connected to the second terminal of each of the first and second coupling capacitors, supplies sequences of digital output signals in response to the differential signals."

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Thus, Arstein appears to be a transmission scheme where the receiver and transmitter are linked by certain time conditions depending upon the clamping signals (signal strength). The overall result of Arstein may be to provide a protocol for supporting a wide dynamic range and optimizing optical communications – however the manner in which Arstein operates is completely different than the receiver reserved protocol of the present invention.

As set forth in the present invention and recited in the responses, the receiver reserved protocol is a scheme wherein there is a dedicated communication path between a central node and a secondary node. In more detail - each secondary node has a dedicated receiver on which it receives data. The central node contains at least one receiver for the multiple transmitters of the secondary nodes. As shown in the present invention Fig. 5 and Fig. 6 as illustrative examples, the present invention is not implemented in accordance with the system of Arstein. If the Office wishes to maintain a rejection based upon Arstein, the Applicant respectfully requests that the Office clarify how the receiver reserved protocol is established by Arstein.

The Applicant also wishes to point out that the further aspects of two-dimensional arrays being fabricated onto a substrate, an ordered fiber array, and the optical couplings according to the further claims possess attributes distinguishable from the cited art and augment the arguments for allowability. Therefore the Applicant believes that the independent claims 17, 28 are traversed herein and all dependent claims therefrom are allowable.

The Office also introduces Cheng (U.S. Pat. No. 5,189,671) in combination with Arstein and Frigo in rejecting claim 20 under 35 USC 103(a). The Office states that Cheng discloses the use of minimal header information for proper routing of signals. Dependent claim 20 refers to an advantage of the receiver reserved protocol whereby the dedicated communication path between the central node and the secondary node alleviates complex header information that is needed in other system. There are other schemes such as Cheng that can be implemented to format header information in a different manner. However, the present invention is defined by the claimed elements – and is distinguishable therewith by these elements.

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Claim 24 is rejected under 35 USC 103(a) as being unpatentable over Frigo in view of Arstein and further in view of Brown (U.S. Pat. No. 6,523,177). The Office cites Brown as teaching an optical bi-directional transmission system with a central node and remote terminals and further including a FIFO buffer as set forth in dependent claim 24. Applicant notes that Brown does not appear to disclose a buffer or memory storage and that the Office takes official notice of this missing element. The Applicant submits that the FIFO buffer is a further limitation with respect to the independent claim 17, argued herein to be allowable, therefore dependent claim 24 should be deemed allowable.

Telephone Interview

Applicant respectfully requests a telephone interview with the Examiner, wherein Applicant believes that such an interview will serve to develop and clarify specific issues and lead to a mutual understanding between the examiner and the Applicant, and thereby advance the prosecution of the application.

Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance or better form for appeal. No new matter is added. Applicant requests speedy reconsideration, and further requests that Examiner contact its attorney by telephone for quickest resolution of any remaining issues.

Respectfully submitted,



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